

Applicant : Joseph Z. Sleiman
Serial No. : 10/719,636
Page No. : 2

CLAIMS

1. (Currently amended) Product labelling apparatus, comprising:

a plurality of labellers, each for labelling a product which is within a target area;

an imager for directly imaging the products;

a processor responsive to an output of said imager and operatively connected to a control input of each of said plurality of labellers for:

processing an image received from said imager to identify a target portion of a product that is appropriate for receiving a label, which portion will pass a target area of a given labeller; and

tracking progress of said target portion of said product and controlling an appropriate one of said plurality of labellers to label said target portion of said product when said target portion of said product is at said target area of said given one of said plurality of labellers.
2. (Currently amended) Product labelling apparatus, comprising:

a plurality of labellers, each for labelling a product which is within a target area;

an imager for imaging products;

a processor responsive to an output of said imager and operatively connected to a control input of each of said plurality of labellers for:

Applicant : Joseph Z. Sleiman
Serial No. : 10/719,636
Page No. : 3

processing an image received from said imager to identify a portion of a product which portion will pass a target area of a given labeller; and

tracking progress of said portion of said product and controlling an appropriate one of said plurality of labellers to label said portion of said product when said portion of said product is at said target area of said given one of said plurality of labellers The product labeller of claim 1 wherein said imager is a colour camera and further comprising a filter for filtering out all but a first range of colours from said image or from light impinging on said camera such that a filtered image is available to said processor.

3. (Original) The product labeller of claim 2 wherein said processing an image comprises:

processing said filtered image to obtain a plurality of groups of blobs, each blob comprising an area of said first range of colours, each group of blobs representing a product; and

selecting a blob from a given group of blobs based on said target area of each of said labellers, said selected blob representing said portion of said product which portion will pass a target area of said given labeller.

4. (Original) The product labelling apparatus of claim 3 wherein said filter is a physical filter in front of said camera.

5. (Original) The product labelling apparatus of claim 3 wherein said filter is an electronic filter.

Applicant : Joseph Z. Sleiman
Serial No. : 10/719,636
Page No. : 4

6. (Original) The product labelling apparatus of claim 5 wherein said electronic filter is implemented in said processor.

7. (Original) The product labelling apparatus of claim 3 further comprising a second filter for filtering out all but a second range of colours representative of a background colour from said image or from light impinging from said camera.

8. (Original) The product labelling apparatus of claim 7 wherein said processor is further for connecting blobs in each group of blobs to represent a product and wherein said selecting is undertaken after said connecting.

9. (Original) The product labelling apparatus of claim 8 wherein said connecting comprises overlaying said filtered camera image representative of said background colour on said filtered image having said first range of colours to assist in identifying said groups of blobs.

10. (Original) The product labelling apparatus of claim 9 further comprising a third filter for filtering out all but a third range of colours representative of colours of obstructions and wherein said connecting comprises overlaying said filtered image representative of said colours of obstructions on said filtered image having said first range of colours to assist in identifying said group of blobs.

11. (Original) The product labelling apparatus of claim 1 further comprising a conveyor adapted move said products through a field of view of said imager and past said labeller.

Applicant : Joseph Z. Sleiman
Serial No. : 10/719,636
Page No. : 5

12. (Original) The product labelling apparatus of claim 1 wherein said products are items of agricultural produce.

13. (Original) The product labelling apparatus of claim 12 wherein said plurality of labellers are tamping labellers.

14. (Original) The product labelling apparatus of claim 10 wherein said products are red tomatoes, groups of said tomatoes being connected by green vines and wherein said filter passes red light and said third filter passes green light.

15. (Original) The product labelling apparatus of claim 3 wherein said selecting is also based on sizes of blobs in said given group of blobs.

16. (Original) The product labelling apparatus of claim 1 wherein said processor is for processing an image to generate a topographic image and to analyse said topographic image to identify topographies indicative of products and select a high point on each product for labelling.

17. (Original) The product labelling apparatus of claim 16 wherein said imager is a stereoscopic camera.

18. (Currently amended) The product labelling apparatus of claim 16 wherein said imager images with sound waves.

19. (Original) The product labelling apparatus of claim 16 wherein said imager is a radar imager.

20. (Currently amended) Product labelling apparatus, comprising:

Applicant : Joseph Z. Sleiman
Serial No. : 10/719,636
Page No. : 6

a plurality of labellers, each for labelling a product which is within a target area;

an imager for imaging products;

a processor responsive to an output of said imager and operatively connected to a control input of each of said plurality of labellers for:

processing an image received from said imager to identify a portion of a product which portion will pass a target area of a given labeller; and

tracking progress of said portion of said product and controlling an appropriate one of said plurality of labellers to label said portion of said product when said portion of said product is at said target area of said given one of said plurality of labellers ~~The product labeller of claim 1~~ wherein said imager is a monochrome camera and further comprising a filter for filtering out all but a first range of grey-scales from said image or from light impinging on said camera such that a filtered image is available to said processor.

21. (Original) The product labeller of claim 20 wherein said processing an image comprises:

processing said filtered image to obtain a plurality of groups of blobs, each blob comprising an area of said first range of grey-scales, each group of blobs representing a product; and

Applicant : Joseph Z. Sleiman
Serial No. : 10/719,636
Page No. : 7

selecting a blob from a given group of blobs based on said target area of each of said labellers, said selected blob representing said portion of said product which portion will pass a target area of said given labeller.

22. (Currently amended) Product labelling apparatus, comprising:

a labeller for labelling products;

a camera for capturing an direct image of a product;

a processor responsive to receiving said image from said camera and operatively connected to a control input of said labeller for:

processing said image of said product to reduce said image to a representation of a plurality of blobs;

analysing said representation to select a ~~one~~ target blob of said plurality of blobs within a labelling area of said labeler and appropriate to receive a label; and

controlling said labeller such that said labeller applies a label to a target area of said product, where said target area of said product corresponds to said ~~one~~ target blob of said plurality of blobs within said labelling area of said labeller.

23. (Currently amended) A method for labelling agricultural produce, comprising:

directly imaging products;

from said imaging, identifying a target portion of a product that is appropriate for receiving a label, ~~which portion that~~ will pass a target area of a given labeller; and

Applicant : Joseph Z. Sleiman
Serial No. : 10/719,636
Page No. : 8

tracking progress of said target portion of said product and controlling an appropriate one of said plurality of labellers to label said target portion of said product when said target portion of said product is at said target area of said given one of said plurality of labellers.

24. (Currently Amended) A method for labelling agricultural produce, comprising:

imaging products;

filtering said image to leave a first range of colours representative of colours of said products;

obtaining a plurality of groups of blobs, each blob comprising an area of the first range of colours and each group of blobs representing one of said products;

selecting a blob from a given group of blobs, which blob represents a portion of a given product which will pass a target area of a given labeller; and

tracking said given product represented by said given group of blobs and controlling said given labeller to label said portion of said given product.